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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,834

05/16/2007

Fred Galkoswki

AP 11086

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EXAMINER

NOLAN, PETER D

ART UNIT

PAPER NUMBER

3661

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,834	<b>Applicant(s)</b> GALKOSWKI ET AL.	
	<b>Examiner</b> Peter D. Nolan	<b>Art Unit</b> 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 18-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/5/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement filed 6/5/2006 has been placed of record in the file.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Regarding claim 1**, the claimed limitation of "determining a steering line of the vehicle" is indefinite because the "steering line of the vehicle" is a mechanical component and it is not understood as to how it can be determined. Examiner believes that the claimed limitation is an attempt to claim "determining a torque applied to the steering line" and the examination of the claim with respect to the prior art is made under this assumption.

***Oath/Declaration***

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because it has not been dated.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 18-20, 22-30, 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. (WO 02/074638 A1) in view of Ono (US 6802226 B2).

**Regarding claim 18**, Barton teaches a method for assisting an operator of a vehicle in adjusting a nominal steering angle at steerable wheels of the vehicle for vehicle stabilization (**see Barton Abstract**), the method comprising: determining a steering line of the vehicle dependent on a difference between a nominal steering angle and an instantaneous steering angle (**see Barton page 10 "Steering Position Control"** in which a torque to be applied to the steering line is determined from the difference between the "steer angle demand", i.e. nominal steering (see pages 5-6 regarding the steer angle demand), and the "measured steer angle", i.e.

**instantaneous steering**); and applying an additional steering torque to the determined steering line of the vehicle (**see Barton pages 8-9**).

However, Barton does not teach estimating a value of a load moment acting on the steering line of the vehicle; and wherein the additional steering torque is established dependent on the estimated value for the load moment.

Ono teaches a method of assisting an operator of a vehicle in adjusting a nominal steering angle at steerable wheels (**see Ono Abstract**) that comprises, in part, estimating a value of a load moment acting on the steering line of the vehicle (**see Ono column 4, lines 47-59**); wherein the additional steering torque is determined on the estimated value of the load moment (**see id**).

It would be obvious to one of ordinary skill in the art to combine Barton and Ono so that the steering torque comprises the additional torque in Barton and the additional torque in Ono because this would entail no change in the respective functions of Barton and Ono and would have yielded the predictable result of determining the additional torque based on the two components.

**Regarding claim 19**, Barton, as modified by Ono in claim 18, teaches where the additional steering torque is composed of at least two additive components, with a first component being determined dependent on a difference between the nominal steering angle and the instantaneous steering angle (**see Barton page 10**), and a second component is established dependent on the estimated value of the load moment (**see Ono column 4, lines 47-59**).

**Regarding claim 20**, Barton, as modified by Ono in claim 18, teaches where the load moment is estimated by a disturbance variable observer unit (**see Ono column 4, line 60 thru column 5, line 2**).

**Regarding claim 22**, Barton, as modified by Ono in claim 18, teaches where a component of the nominal steering torque is determined dependent on a deviation between a yaw angle of the vehicle and a predetermined value of the yaw angle (**see Barton pages 6-10**).

**Regarding claim 23**, Barton, as modified by Ono in claim 18, teaches where a component of the nominal steering angle is an estimated track steering angle (**see Barton pages 6-10, specifically page 7 where the steer angle of the front wheels is input to the vehicle model**).

**Regarding claim 24**, Barton, as modified by Ono in claim 18, teaches where a component of the additional steering torque has a predefined amount (**see Barton page 10**).

**Regarding claim 25**, Barton, as modified by Ono in claim 18, teaches where the component of the additional steering angle with the predefined amount is set for a predetermined duration after a start of a braking operation (**see Barton page 11**).

**Regarding claim 26**, Barton teaches a device for assisting an operator of a vehicle in adjusting a nominal steering angle on at least one steerable wheel of the vehicle for vehicle stabilization (**see Barton Abstract**), the device comprising: a control unit for determining a deviation between a nominal steering angle and an instantaneous steering angle of the vehicle (**see Barton page 10 “Steering Position Control” in**

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**which a torque to be applied to the steering line is determined from the difference between the "steer angle demand", i.e. nominal steering (see pages 5-6 regarding the steer angle demand), and the "measured steer angle", i.e. instantaneous steering);** a torque adjusting device that adjusts an additional steering torque, wherein the additional steering torque is determined based on deviation between the nominal steering angle and the instantaneous steering angle (**see id**).

However, while Barton teaches where the system comprises one or more sensors mounted in the steering line of the motor vehicle (**see Barton figure 1, steering angle**), it does not teach where the system further comprises an estimation device for estimating a load moment that acts on the steering line based on signals from the one or more sensors mounted in the steering line of the motor vehicle; a device for establishing at least one component of the additional steering torque for the estimated load moment; and an adder for adding the additional steering torque to the steering torque established by the deviation between the nominal steering angle and the instantaneous steering angle, wherein the torque adjusting device is driven by an output of the adder.

Ono teaches where a steering system may comprise in part comprises one or more sensors mounted in the steering line of the motor vehicle (**see Ono figure 1, steering angle sensor 18 and torque sensor 20**); an estimation device for estimating a load moment that acts on the steering line based on signals from the one or more sensors mounted in the steering line of the motor vehicle (**see Ono column 4, lines 47-59 where the system includes a self aligning torque estimating means**); a device

for establishing at least one component of the additional steering torque for the estimated load moment (**see id**).

It would be obvious to one of ordinary skill in the art to combine Barton and Ono so that the steering torque comprises the additional torque in Barton and the additional torque in Ono because this would entail no change in the respective functions of Barton and Ono and would have yielded the predictable result of determining the additional torque based on the two components. This would necessarily include the use of an adder.

**Regarding claim 27**, Barton, as modified by Ono in claim 26, teaches where the one or more sensors includes at least one of a steering angle sensor, a sensor for measuring a hand steering moment representative of steering request from the operator, and a sensor for measuring the additional steering torque (**see Barton figure 13**).

**Regarding claim 28**, Barton, as modified by Ono in claim 26, teaches where the estimation device for estimating the load moment is designed as a disturbance variable observer unit (**see Ono column 4, line 60 thru column 5, line 2**).

**Regarding claim 29**, Barton, as modified by Ono in claim 26, teaches where the torque adjusting devices comprises a servo motor of an electric power steering system (**see Barton page 1 which teaches that the use of electrical motors in electrically assisted steering systems is well known in the art**).

**Regarding claim 30**, Barton, as modified by Ono in claim 26, teaches where the torque adjusting devices comprises a hydraulic power steering system (**see Barton**



**page 1 which teaches that the use of electric-hydraulic systems in electrically assisted steering systems is well known in the art).**

**Regarding claim 32**, Barton, as modified by Ono in claim 26, teaches where the device further comprises a pilot control which connects to the adder and transmits an additional steering torque with a predetermined value to the adder for a predetermined period (**see the rejection of claim 26 above and pages 10-11 of Barton**).

**Regarding claims 33-34**, Barton, as modified by Ono in claim 26, teaches where the device further comprises a detector for detecting a driving condition, wherein dependent on a detected driving condition the detector submits an activation signal to a multiplier, which multiplies the activation signal by the additional steering torque established, wherein the activation signal adopts a value of 1 when the detector identifies a braking operation on an inhomogeneous roadway (**see Barton figure 14 and page 16 where the steering torque is enabled through multiplication by a flag signaling split-mu braking from the ABS, with a value of one when split-mu braking is detected**).

3. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. (WO 02/074638 A1) in view of Ono (US 6802226 B2) and further in view of Ekmark (US 2004/0148080 A1).

**Regarding claim 21**, Barton, as modified by Ono in claim 18, teaches where a component of the nominal steering angle is determined in a vehicle model dependent on a disturbance yaw torque (**see Barton pages 6-8**), but does not teach where the vehicle model is an inverse vehicle model.

However, Ekmark teaches where it is well known for a component of a nominal steering angle may be determined in an inverse vehicle model dependent upon a disturbance yaw torque (**see Ekmark paragraphs 17-20**). Therefore it would be obvious to one of ordinary skill in the art to use an inverse vehicle model.

4. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. (WO 02/074638 A1) in view of Ono (US 6802226 B2) and further in view of Kind (US 6,712,175 B2)

**Regarding claim 31**, Barton, as modified by Ono in claim 26, does not teach where the torque adjusting devices comprises a steer-by-wire steering system. However, it would be obvious for the torque adjusting devices in Barton to comprise a steer-by-wire system because this is well known in the art (**see Kind column 3, lines 26-28**).

### ***Conclusion***

Any inquiry concerning this or any earlier communication from the examiner should be directed to Examiner Peter Nolan, whose telephone number is 571-270-7016. The examiner can normally be reached Monday-Friday from 7:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black, can be reached at 571-272-6956. The fax number for the organization to which this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peter D Nolan/

Examiner, Art Unit 3661

2/24/2010

/Thomas G. Black/

Supervisory Patent Examiner, Art Unit 3661